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ABSTRACT

A study examined the effects of prediction training on the reading comprehension and written composition performance of fourth-grade students on the following reading and writing tasks: story recall, story generation, and number of relevant predictions. Subjects, 40 students attending two private urban elementary schools, were assigned to one of two treatment conditions (prediction training or rereading) and each group participated in three training sessions. Results showed that students who received prediction training outperformed the reread group on generating predictions about stories they were reading and in story generation. No significant differences were found between the groups with respect to free and cued recall performance following story reading. (One table of data is included and 25 references are attached.) (SR)

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PREDICTION TRAINING AND THE COMPREHENSION AND COMPOSING PERFORMANCE OF FOURTH-GRADE STUDENTS

Running head: Prediction Training

Prediction Training and the Comprehension and Composing Performance of Fourth-grade Students

Reading and writing have both been described in the literature as acts of composing and comprehending (Squire, 1983; Tierney & Pearson, 1984; Flood & Lapp, 1987). Reading and writing are interactive processes that share certain linguistic and cognitive similarities (Flood & Lapp, 1987). Wittrock (1983) has hypothesized that effective reading and writing involve generative cognitive processes, and that readers and writers create meaning as they build relationships between the text and what they already know.

Prediction, as a learning strategy, is defined as a person's use of knowledge about language and the context in which it occurs to anticipate what is coming in oral or written discourse (Harris & Hodges, 1981; Smith, 1978). Prediction involves learners in the generation of predictions and in the active evaluation or validation of these predictions. Anderson (1976) found that procedures which encourage the reader to predict facilitate learning. Prediction arouses students' interest (Mason & Au, 1986; Nichols, 1983), helps students focus on details (Wagner, 1984; Ferguson & Kennedy, 1985), and helps students set

The purpose of the present study was to examine the effects of prediction training on the reading comprehension and written composition performance of fourth-grade students. Specifically, the study sought to determine whether the performance of students who received prediction training would differ from that of students in a comparison group (rereading) on the following reading and writing tasks: story recall, story generation, and number of relevant predictions. The major hypothesis underlying this study was that prediction training would provide students with a personalized framework for anticipating story meaning, thereby enhancing both the comprehending and composing processes.

Method

Subjects

Fourth-grade students attending two private elementary schools in an urban school district were the subjects in this study. The socio-economic levels in the schools ranged from lower-middle to middle class. Both schools represent a wide cross-section of social, ethnic, and economic diversity. To be eligible for the study, subjects had to

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have scores of a least 3.0 on the reading section of the Iowa Tests of Basic Skills. Forty subjects who met the criteria for inclusion in the study were randomly assigned to one of the two treatment conditions, prediction or reread.

Materials

The materials used in this study consisted of six stories, five prediction guides, and training scripts.

Stories. Six stories were chosen from the Reader's Digest Reading Skill Builders. All stories were written on the third-grade level according to the Fry Readablity Scale (Fry, 1968). The stories were all narrative in style and consisted of approximately 420-600 words in length. Three stories were used for the three training sessions and three stories were used for assessment.

Prediction Guides. Prediction guides (Nichols, 1983) were developed by the researchers and a panel of four teachers for each of the three stories used in the training sessions. Each prediction guide consisted of a set of ten prediction questions (five text-based and five reader-based).

Training Scripts. To ensure uniform instruction across the two treatment conditions (prediction, reread), training scripts were developed. One script was written for each of the six days of the study. The scripts were piloted for clarity of language and clearness of instructions with twelve fourth-graders who did not participate in the study.

Procedures

Subjects were randomly assigned within schools to one of two treatment conditions: a prediction training condition (n=20) and the reread condition (n=20). Both the prediction and reread groups participated in three sessions (forty-five minutes each) of training. Training scripts were used to ensure uniformity of time, material, content, and instructions across treatment groups.

Prediction Training Condition. On day one, subjects in the prediction training condition were informed that they would be learning to use the prediction strategy which would "help you understand and remember what you read." Four basic steps of the prediction strategy were emphasized: getting clues, predicting, reading, and checking. The continuous use of the prediction strategy throughout the reading of a piece of text was emphasized. Students were

informed that they would be using prediction guides that would show them good examples of prediction questions. Students were then given a booklet with a story (divided into two sections) and two accompanying prediction guides (one for each story section). Each prediction guide consisted of a) ten prediction questions, b) prereading instructions, "Before you read the story see how well you can predict what you are going to learn from the story. Place a check next to every prediction question you think will be answered in the story," and c) post-reading instructions, "Put a check next to all the prediction questions you are able to answer now that you have read the story." After reading the story and completing the prediction guides the students were again reminded of the four basic steps in the prediction strategy and the importance of using prediction throughout the reading of a text.

Day two of training was identical to day 1, except that a new story and new prediction guides were used. On day 3 of the training the students read one story and completed one prediction guide. Students were then asked to render a written free recall of the story they had just completed reading (free recall task).

On day 4 students read a story (divided into 3 sections) and then, after reading sections 1 and 2, responded to the following: "What do you think will happen next? Write as many predictions as you can," (immediate prediction task). Students then completed the story by reading section three. Students were then given another short story to read and were asked to respond to 10 questions (cued recall task).

On day 5 students were given a story starter and were instructed to "write your own story using the title and opening sentences below," (story generation task).

Two weeks later, on day six of the study, students were again given a story divided into three sections. They were instructed to read sections 1 and 2 and then respond to the the following: "What do you think will happen next? Write as many predictions as you can," (delayed prediction task). Students then completed the story by reading section three.

Reread Training Condition. Time, materials, and procedures were consistent across both treatment conditions except that students in the reread condition were informed that they would use the reread strategy. To ensure that time was equivalent across the two treatment conditions, two

questions were used at the conclusion of the rereading. The questions used for discussion were, "Who can tell me what the story was about?" and " What did you learn from the story?"

Design and Data Analysis

The design of the study was the posttest-only control group design. The independent variables were the prediction and rereading treatments, and the dependent variables were free recall, cued recall, story generation, and number of predictions (immediately after training and two weeks following training).

Propositional analysis was used to obtain scores on the free recall task. Interrater reliability for the scoring of propositions was established at .95. The score on the cued recall task represented the total number of correctly answered questions. A pool of acceptable answers to the cued recall questions were generated by the two researchers and used for scoring student responses. On both the immediate and delayed prediction task, subjects received one point for each text-relevant prediction generated. Interrater reliability for the scoring of text-relevant predictions was 100%. The story generation task was scored

according to the number of story structure elements occurring in each story (Morrow, 1988). The interrater reliability for the scoring of story structure elements was established at .94.

Analysis and Results

Analysis of covariance procedures were employed to test for significant differences between treatment groups. Scores from the Iowa Tests of Basic Skills, reading, were used as the covariate.

Analysis of covariance procedures revealed statistically significant differences on the immediate prediction task [F (1, 32) = 5.00, p <.05], the story generation task [F (1, 32) = 6.36, p <.05], and the delayed prediction task [F (1, 32) = 10.88, p <.05] in favor of the prediction training group. There were no significant differences on the retelling [F (1, 32) = 2.87, p >.05] and question-response tasks [F(1, 32) = .243, p >.05]. Means and standard deviations are presented in Table 1.

Insert Table 1 About Here

Discussion

This study was designed to investigate the effects of prediction training on fourth-graders' comprehension and composing performance. Students who received prediction training outperformed the reread group on generating predictions about stories they were reading, immediately after training and two weeks following training. The prediction group was also superior to the reread group on the story generation task. No significant differences, however, were found with respect to free and cued recall performance following story reading.

Many researchers have stressed the central role of prediction in the reading process (Irwin, 1986; Olshavsky, 1978). It is becoming apparent that both good readers and good writers use various event and text structure expectations (Irwin, 1986). When using the prediction strategy, readers and writers appear to use what they know about the topic, the type of text, the author's purposes, and their own purposes, to make predictions about content of the text.

The major findings of this study provide support for the hypothesis that prediction plays an important role in

both the comprehension and composing processes. This study provides evidence that fourth-grade students' ability to generate text-appropriate predictions about what they are reading can be significantly improved with brief training and, of most importance, that the benefits are maintained up to two weeks after training. The results in favor of the prediction group on the delayed prediction task suggests that students were able to transfer the prediction training to a subsequent task. This finding provides support for the transfer value of training students in the prediction strategy.

Prediction training resulted in superior performance on a composing task. Students in the prediction training group wrote stories which contained more story structure elements than students in the reread group. When students engage in predicting story information or events they are generating their own ideas, based on knowledge of the world. Prediction appears to be closely linked to the generation and elaboration of ideas (Afflerbach, 1990; Irwin, 1986). This may explain why the prediction training group outperformed the reread group on the composing task.

There were no significant differences between the prediction and rereading groups on the free and cued recall

of what they read. One possible explanation for this finding is that both strategies, predicting and rereading, appear to enhance reading comprehension. Rereading has been shown to be an effective strategy for increasing comprehension (Kardash, Amlund, & Kulhavy, 1984; Todd & Kessler, 1971), and, for older students, to improve both the quality and quantity of recall of text (Amlund, Kardash, & Kulhavy, 1986).

It is important to note that the prediction training in this study did not provide students with opportunities to generate or write their own predictions. Prediction guides were provided which modeled prediction questions. Only at the point of the first assessment task were students asked to generate their own predictions about a story they were reading, and then, two weeks later they were asked to read another story and generate predictions. The results of this study suggest that training which focuses on student recognition of predictions enhances students' ability to generate their own text-appropriate predictions.

In summary, it appears that the employment of the prediction strategy provides a personal framework for the integration of knowledge for both the comprehending and composing processes. The results of this study suggest that

prediction may be a valuable generative learning strategy for both comprehending and composing, and that prediction training has direct, beneficial consequences on students' ability to generate text-appropriate predictions when reading and writing.

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Table 1

MEANS AND STANDARD DEVIATIONS FOR FREE AND CUED RECALL, STORY GENERATION, IMMEDIATE PREDICTION, AND DELAYED PREDICTION.

	Prediction Group (n=20)		Reread Group (n=20)		
	M	SD	M	SD	
Free Recall	15.80	(5.31)	19.15	(6.92)	
Cued Recall	8.50	(1.53)	8.70	(1.26)	
Story Generation	4.30	(.57)	3.85	(.67)	*
Immediate Prediction	4.75	(2.20)	3.55	(1.19)	*
Delayed Prediction	7.50	(3.82)	5.30	(2.13)	*

*significant at the .05 level